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The Impact of Social Media Advertising on Sales of Consumer Products

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The Impact of Social Media Advertising on Sales of Consumer Products

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Abstract

The Impact of Social Media Advertising on Sales of Consumer Products

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As more people join social media and become daily users, brands too have increased their involvement online but it remains unclear how to effectively measure the value and return on investment for these brands. This thesis examines the social media performance model (SMPM) using a vodka startup's social media holiday campaign. The goal of this holiday campaign is to drive website traffic through paid social media advertising. The model finds that the brand's advertising spend on Facebook, Instagram, Messenger and Audience Network was associated with one key performance indicators — website sessions. The SMPM provided data-driven insights from paid social media that brand strategists can utilize to in future campaigns.

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Chapter I: Introduction

Before social media, it was a challenge to advertise solely to your target market. With traditional advertising outlets, you could spend $1,000 USD on a billboard and advertise to 500 people a day but you would have no control over as to who is seeing your advertisement. Social media has provided a means to directly target your desired customer by utilizing demographics and psychographics and filtering out people so that you are left with the people who are most likely to purchase your product (Samuel, 2017). In essence, spending as little as $20 on Facebook to promote a post could result in a post reaching 4,500 people, all of whom are within your targeted demographics.

Today, people are spending more time on social media than watching TV. On average, 50 percent of people use Facebook daily, compared to only 39 percent watching TV in the US (Cooper, 2018). As of June 2018, there are 1.47 billion daily active users on Facebook *(Marketing on Facebook*, 2019). The social media platform has become a playground for advertisers because not only is there a significant amount of people on the platform daily, 76 percent of US consumers have purchased a product they have seen in a brand's social media post. The average user clicks on 10 Facebook ads every month, and for female-identified users that number increases to 12. Fifty-two percent of American consumers report that they have seen a product they are interested in on Facebook in the last three months. This number is even higher for 18 to 34 year-olds, with 78 percent saying they have seen interesting products. Furthermore, nearly 48% of American social

media users say they purchased an item they initially saw on Facebook. The next most popular was Instagram with a mere 8.6 percent.

As companies and advertisers appreciate the value of social media, social media advertising revenue is projected at $51.3 billion USD for 2018 and the revenue is projected to grow 10.5 percent annually. Furthermore, social media advertising budgets are predicted to increase by 32 percent in 2018 (roughly $32 billion USD), and almost double by 2023 (Cooper, 2018). Additionally, social media advertising was projected to account for about 16 per cent of the digital advertising market in 2017 (Gullans, 2016). As social media advertising budgets continue to grow, brands are investing more into creative content and should be also be investing into their measurement and data analysis capabilities (Wilcox, Sussman, & Chung, 2018).

Millennials and Gen Z think social media is the most relevant media for ads and in all age groups, 35 percent of women and 22 percent of men identify social media as the most relevant channel for advertising (Welch 2018). Even though there are billions of users and large investments in social media, marketers still struggle to prove its value (Cooper, 2018). Specifically, measuring the return on investment of social media proves itself to be a challenge for most marketers (Moorman, 2016). Metrics like reach and engagement are easy to track and measure but analysis becomes more complex when measuring outcomes like reputation, customer insight and loyalty. In fact, a 2016 survey of over 400 US chief marketing officers (CMOs) reported that nearly 80 percent were unable to quantify the value of their social media efforts (Moorman, 2016). Meanwhile, a 2017 survey of marketers using social media found that the number one question for 93

percent of marketers was simply: what tactics work best? This result is not surprising given the constant changes that take place across many social networks. Following as a close second, 89 percent of marketers also want to know how to measure their ROI for social activities (Stelzner, 2017).

While social media provides many metrics to measure performance like likes, engagement, shares, etc. these metrics do not convey business value. Does a brand use social media to drive website traffic or to increase sales? Where can success be attributed? Whatever the goal, the first step is to establish specific and measurable key performance indicators (KPIs) capable that will create data-centered solutions capable of providing meaningful insight.

ORGANIZATION OF THE THESIS

This thesis is organized into five chapters, the first chapter being an introduction. Chapter II presents a review of advertising analytics, models used for data collection and current literature relevant to this study. The evaluation of a media mix model as a tool to be used by marketers is discussed in Chapter III, by evaluating the efforts of digital marketing of a brand using paid social media. Chapter IV details the procedure and findings of the model. In Chapter V, the overall discussion, implications and conclusions suggested by the model findings are discussed. Additionally, the concluding chapter presents a discussion of the limitations of the study and suggestions for future research and implementation.

Chapter II: Literature Review

This chapter evaluates how determining the business value in advertising been historically difficult. It explores how the introduction of the Internet and social media shaped the advertising industry and paved the way for analytics to be used in marketing. Then it discusses the Media Mix, Multi-Channel Attribution Across Digital Channels, Time Decay Attribution, Social Media Performance, and Paid, Owned and Earned Models as a way businesses analyze their marketing efforts. Lastly, it examines how analytics and models can provide business value when brands apply the insights found.

THE NEED FOR DATA

Advertising is an integral part to America and essential to run business. Advertising would stimulate demand and drive sales; however, businesses were unsure of which advertisements were responsible for the increased business. American entrepreneur John Wanamaker famously said, "Half the money I spend on advertising is wasted; the trouble is I don't know which half" (*Who Made America?*). In the late 1800s, there was no way to gauge the return on investment (ROI) for an advertisement but that was about to change with the inception of the Internet. In the early 1990s, the Internet was proving to advertisers a force to be reckoned with. Procter and Gamble CEO Edwin L. Artzt warned advertisers that a "new media" might do away with advertising in general and Sprint CEO William T. Esrey forewarned in 1994,

> Clients are going to hold ad agencies more closely accountable for results than ever before. That's not just because we're going to be more

> demanding in getting value for our advertising dollars. It's also because we know the technology is there to measure advertising impact more precisely than you have done in the past
> (O'Guinn, Allen, Semenik, & Close-Scheinbaum, 2019).

Wanamaker's problem would soon be resolved thanks to the new digital age.

HOW ANALYTICS REINVENTED ADVERTISING

The shift from traditional to digital advertising allowed advertisers to utilize data to understand their markets and how their advertisements were performing, leading to a deeper understanding of their consumers. The data collected is willingly provided and easily collected. The consumers' online habits such as site visits, duration on site and products viewed, provide companies and advertisers important insights that can be used to better know and serve their consumers. One of the advantages of big data is that it can be used not only to target advertising to certain consumers, but also to track the response to such advertising (*How Analytics Reinvented Advertising*, 2017). For example, if an advertiser notices consumers skipping their ads on YouTube, they can respond quickly and change the advertising platform into a medium with which the consumer is more willing to engage.

The ability to respond in real-time to make fixes and changes is an advantage to advertisers. Bob Gooze, a principal at Santa Clara, California-based Customer Manufacturing Group remarked, "The web gives you immediate feedback," he explained, "when you do a direct marketing campaign, you don't know how many opens you get.

With the web, whenever they open it, you know it, and you know what else they did" (Cook, 2011).

ROI OF SOCIAL MEDIA

The advent of digital advertising coincided with the introduction of social media and social media analytics. Social media analytics can help companies improve their reputation and business performance by "developing and evaluating informatics tools and frameworks to collect, monitor, analyze, summarize and visualize social media data" as well as facilitating "conversation and interactions to extract useful patterns and intelligence" (Fan & Gordon, 2014). Smart devices, social media platforms and search engines combine to create a digital landscape that is threaded throughout our lives seamlessly. There is a number of social media sites and millions, if not billions (Facebook), users on each.

The most popular online activity is social networking, and more than 90 percent of adults that are online are regular social media users, spending more than 20 percent of their time on social media (Fan & Gordon, 2014). Social media is widely accessible and free due to advertising. Facebook CEO Mark Zuckerberg wrote in a *Wall Street Journal* op-ed, "If we're committed to serving everyone, then we need a service that is affordable to everyone. The best way to do that is to offer services for free, which ads enable us to do" (Zuckerberg, 2019). The influence of social media in our lives is enormous and is completely intertwined with advertising. Gone are the days of pop up ads; social media ads are native and blend in to the social landscape. These ads look like content your

friends or people you follow may post and integrate social action in the ads, allowing users to see if friends have liked or interacted with products being advertised (Fan & Gordon, 2014). Similarly to how users interact with web pages, companies can use social media analytics to collect data to better understand and serve their consumers.

Companies must understand how social media can affect KPIs e.g. revenue growth, engagement level, website sessions, etc., and how to improve results with the metrics provided to ensure the greatest ROI. Brands may use social media to increase brand awareness, build community, or improve customer service. For example, if a company assigned a KPI of increased brand awareness on Facebook, an advertiser may use information such as number of page likes, post reach, or any metric provided with paid advertising on Facebook such as Cost Per Impression. As social metrics are collected, it is important for advertisers to track their activities and the outcomes they produce and compare the results with sales and branding goals to determine what is working and what is not. Then, the social media strategy can be altered to improve results and tested again to ensure the strategy is working (Dodaro, 2019). Social media can be an amazing tool to help achieve important business outcomes; however it will not produce the results on its own. It is important to understand how social media can help businesses achieve the most meaningful objectives and this includes knowing and tracking the results and KPIs that will help define a business' success and maintain it.

There are three stages to social media analytics: capture, understand and present. Capture means to obtain relevant social media data by "monitoring, or listening to various social media sources, archiving relevant data and extracting pertinent

information" (Fan & Gordon, 2014). However, not all data collected is valuable. To best understand the data it is imperative advertisers and companies select relevant data to use for modeling or other advanced data analytic methods to gain insights from them.

The understand stage is central to the entire social media analytics process. Models assist in helping advertisers retrieve significant data, information and metrics to help future decisions. A model is a mathematical relationship that shows the relationship between different variables — in this case variables that may affect sales. It shows what happens when one variable changes the company and how it affects the other (Cook, 2011).

Statistical models have been used for decades to determine the effectiveness of advertising spend not only on revenue but also on other measures. Models attempt to attribute credit to one or more media channel for the conversion of the KPI being measured. Using an attribution model, for example gives a brand the ability to understand how media channels, tactics and allocations work and allows for real-time planning optimization (Wilcox, Sussman, & Chung, 2018). Attribution works best to measure online conversion paths since it is analyzing a setting where data is collected continuously and frequently updated. Popular models used by advertisers and marketers include Media/Marketing Mix, Multi-Channel Attribution Across Digital Channels, Time Decay Attribution, and Social Media Performance to assess a brand's marketing mix.

MEDIA MIX MODELING

Media Mix Modeling (MMM) is used to analyze sales data to determine the effectiveness of the marketing mix. First introduced in 1989, the MMM uses a collection of large data and an intricate statistical model to experiment "with different levels of marketing spending via the various channels" (Cook, 2011). MMM is a top-down approach used to evaluate how best to allocate macro-level spending between channels (Hinson, 2016). MMM creates a response curve for each type of marketing spend and when executed correctly, a company can visualize where its efforts are most effective.

MMM is a standard tool for large consumer goods companies, including wireless, consumer electronics, travel and tourism, and quick service restaurant, and the model provides indication of what works and what does not in the marketing mix (Cook, 2011). MMM has traditionally been the best fit for brands that focus more on offline channels, but in today's digital age these lines are blurring as companies across the board integrate their offline and online media channels (Hinson, 2016), which has facilitated the widespread use of Attribution Modeling to measure ROI in online channels.

ATTRIBUTION MODELING

Attribution Modeling (specifically digital attribution) focuses on a more frequent bottom - up approach involving more granular planning and optimization and can provide more powerful information like:

- Identifying the most influential conversion points in a consumer's digital journey,

- Understand with precision how media assets performed along the conversion path.
- Enable intelligent optimization recommendations, such as how should marketers shift budget by tactic, ad group (SEM), publisher (display), placement (display), keyword (SEM), etc. (Hinson, 2016).

Attribution modeling differs from MMM in the following ways: MMM focuses on a top-down approach through channel allocations and Attribution Modeling (specifically digital attribution) focuses on a bottoms-up approach (at the transaction level) that involves more granular planning and optimization on a more frequent basis.

MULTI-CHANNEL ATTRIBUTION ACROSS CHANNELS MODEL

MCA-ADC covers the "challenge of attributing credit to all digital marketing channels (social, display, video, mobile, email, search, etc.) that contributed to a particular conversion or multiple conversions" (Kaushik, 2013). Most web analytics tools such as Google Analytics and SiteCatalyst currently assign a conversion to the channel immediately before the conversion by default, also known as last click attribution. The MCA-ADC model tries to go beyond the last click and get a complete picture of all marketing activity before the conversion.

TIME DECAY ATTRIBUTION MODEL

The Time Decay Attribution Model uses an algorithm to assess the media touch point closest to the conversion gets most of the credit, and the touch point prior will get less credit (Kaushik, 2013). For example, if a user saw an ad from a Google search a week before a purchase, saw an ad on social media a couple days before purchase and received an email a few hours before a purchase, the email would receive the most credit it because the customer interacted it within a few hours of conversion. Since the social ads were seen a couple days before it would receive less credit than email and paid search would receive least credit because it occurred a week earlier.

SOCIAL MEDIA PERFORMANCE MODEL

The Social Media Performance Model was developed in early 2010 as a predictive multivariate time-series "statistical model in which multiple variables are used to measure and quantify organic social media performance" (Wilcox, Sussman, & Chung, 2018). The SMPM (a modified media mix model) has previously identified significant relationships between not only organic but paid social media variables, email spending, and Google Adwords resulting in scientific measurement results for non-profit, Business-to-Consumer, and Business-to-Business brands. The SMPM allows advertisers to apply a media mix procedure with a data driven approach.

Strategists can evaluate the model's effectiveness by "isolating statistically significant predictor variables' impact on KPIs" which assists in the development of future deployment (Wilcox, Sussman, & Chung, 2018). The SMPM has the potential to

lead the implementation of a more effective integrated marketing campaign by identifying successfully the marketing communication activities and their relative importance to the response of the audience. This model empowers successful strategic planning and application as it can best assess which marketing placement yields the most success.

Furthermore, the ability to understand the short-term impact further enables a more calculated plan to impact the long-term business goals of the company. It plays an important role in the ongoing assessment of performance and leads to more effective cross-channel communication strategy implementation in both Business-to-Business and Business-to-Consumer environments as well as improved ROI for any Business-to-Consumer brand seeking a quantitative assessment of its marketing communication activity (Wilcox, Sussman, & Chung, 2018).

PAID, OWNED AND EARNED MODEL

The previously mentioned models quantify paid media effects on revenues; however, measuring owner or earned media with these models is not possible because they often have low or no direct effect on sales as they typically have a "long-term" effect on brand attitudes. The Paid, Owned and Earned Model (POE) can describe contributions and efficiency in terms of both revenue and brand attachment contributed with owned and earned media (Sciarrino, Friedman, Kirk, & Kitchings).

Persuasive hierarchy assumes that persuasion occurs in an order; earlier activities create preconditions for later activities. For example, a company may use a newspaper ad

(paid media) to inform and then use its website (owned media) and social media (earned media) to engage and persuade through the shaping of a brand attitude, which can eventually lead to a sale. Furthermore, when a prospective customer views branded video content on a company's website, it may not result in an immediate sale, but it may improve the brand attitude and thus have a long-term, intermediate effect that a classic media mix or attribution model neglects. Whether a communication tactic is meant to inform or persuade, utilizing the POE to quantify the direct and intermediate contribution and efficiency of each individual marketing tactic will enable brand managers to more accurately evaluate and optimize a brand's entire owned and earned communications efforts (Sciarrino, Friedman, Kirk, & Kitchings).

BENEFITS OF SMPM APPROACH

Social media analytics and data modeling provide businesses the opportunity to analyze changes in attitudes, behavior and motivations to the brand. The online conversation brands have with consumers allow companies to be more efficient, adjust products and features and help create enough lead times for the creation of next-generation products or even entirely new products.

An example of how brands utilize online conversations for planning new and adjusting old products is Dell Inc. In 2007, Dell created IdeaStore a website to solicit users' ideas about improving its computer products and services. Dell took the ideas seriously, read the comments from others and began making changes to its products as needed (Bayus, 2013). Moreover, the software industry has continued to use social media

as a place to solicit reaction of products and promoting open source programs allowing user changes. Furthermore, social media analytics can mitigate risk involving supply-chain responsiveness. Utilizing social media listening tools can help anticipate customer tastes and behavior as well as changes in demand and can adjust production accordingly.

Businesses most commonly use social media for brand awareness, brand engagement and word of mouth (Fan & Gordon, 2014). Brand awareness introduces a brand or product to customers or increases brand familiarity. Brand engagement increases connections with a brand to customers. Word of mouth encourages customers to speak positively of the brand to their peers to influence their purchasing behavior (Fan & Gordon, 2014). There are a number of metrics used to assess effectiveness on social media. For example, on Facebook basic ones include likes on posts (brand awareness), number of followers and replies (brand engagement), and number of shares (word of mouth).

Although those metrics provide fundamental information for advertisers, they are not a substitute for the information a SMPM model could provide. For example, which social platform is making the most of the company budget increasing brand awareness and engagement for the lowest cost. Additionally, social media analytics allows business to utilize engagement judge online reactions to ad campaigns. Metrics can be used to link a campaign to sales, and thus the success of the campaign. Assessing the reactions of customers online can change the campaign according to their likes and dislikes.

Word of mouth extends beyond a positive retweet or share and includes customers online complaints. Nearly two-thirds of all customers worldwide use social media to

complain and 50 percent of all online users expect a response (Fan & Gordon, 2014). However, real-time sentiment analysis like Nuvi allow brands to know how their customers feel about products and services and allow them to respond quickly before a complaint gets out of hand. Social media is a useful tool business can use to interact directly with their customers as well as individually when needed.

Social media analytics and statistical models have been established as a way to determine the effectiveness of advertising expenditures on not only revenue but other measures as well. Today, it is still important to evaluate not only an advertiser's media spending decisions but also the best marketing mix to enable a clearer picture of the overall efforts and to allow for adjustments in the future. The next chapter evaluates a brand's paid social media campaign and an assessment of their marketing communication effectiveness based on the SMPM to determine the effectiveness of their media spend in order to evaluate their budget allocations.

Chapter III: Research Questions

This chapter introduces the research questions used to evaluate the SMPM and answers the questions. The details of the Hell's Half Acre social media holiday campaign are presented. Then the data collection process and analysis is explained.

The goal of this thesis is to provide further evaluation of the SMPM as a tool to be used by strategists to evaluate the efforts of digital marketing of a brand specifically paid social media. The KPI used for this study was website sessions. Based on this goal, two research questions were developed:

- RQ1: Can the SMPM identify social media ad spend variables that are related to consumer website sessions?
- RQ2: Can the SMPM provide a measure of the importance of those identified variables?

As previously stated, the SMPM, a media mix model, is an applied analysis used to identify which digital marketing channels (Facebook, Instagram, Messenger, Audience Network) have not only contributed to a campaign's success but also to estimate their importance to the KPI -- website sessions. For example, did the Instagram ads contribute more to the success of website visits than the Facebook ads? Understanding these events provide advertisers with a strategic, data-driven opportunity to evaluate the SMPM's ability to identify the importance of various online actions on measurable outcomes.

DETAILS OF THE CAMPAIGN

A Thanksgiving-Christmas holiday campaign was developed for a Fort Worth, Texas vodka startup, Hell's Half Acre 1885 Vodka, with the goal of selling their new branded mug through their website. The purpose of the campaign was to drive awareness for over 10,000 social media followers (combined across channels) and sales of their new branded Moscow mule mug. A pre-planned advertising campaign integrated a mix of content, media and calls-to-action. Festive editorial content was created to inspire the community to gift the mugs during the holiday season with a bottle of vodka. Imagery included photography portraying the vodka bottle and the Moscow mule mugs in an unwrapped gift as well as Santa taking the mugs out of his gift bag. Using Facebook's ad network as well as Instagram, the advertisements were published on Black Friday and were continually shown through December 25th. Using native advertising available through the social media channels, social media posts were targeted to relevant audiences, as well as displayed as banner ads within Facebook's audience network. Posts used website links to drive traffic from social media to the website.

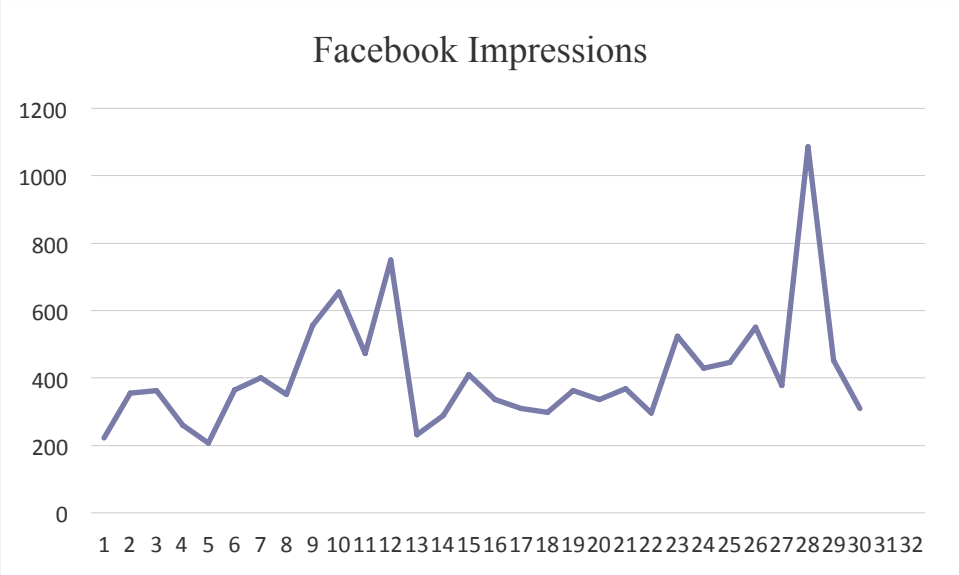

Figure 1: Facebook Impressions.

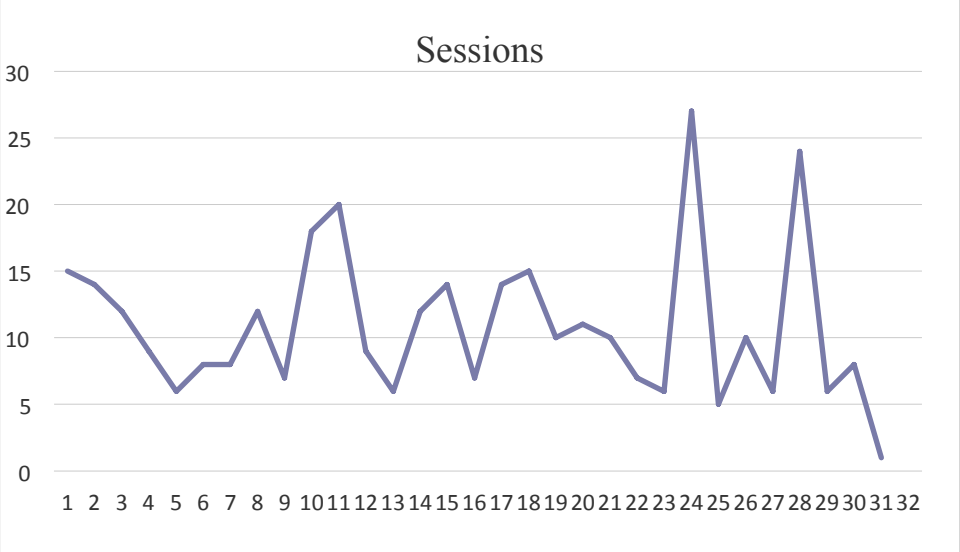

Figure 2: Website sessions.

Following the campaign, the KPI for increased website sessions indicated a successful campaign resulting in almost 400 new website sessions as well as over 17,000 people reached during the campaign (Figures 1 and 2). Without applying the SMPM, however, the data lacked clarity in understanding which activities made significant impacts website sessions. Which channels and posts led people to the website? While simple KPIs were achieved in this Business-to-Consumer campaign, without the SMPM providing a more detailed analysis, there were still factors to be discovered to show what led to success in which specific marketing communication actions.

DATA COLLECTION

Previous research using the SMPM examined a variety of brands in non-profit Business-to-Consumer and Business-to-Business environments. This thesis specifically seeks to provide a continued evaluation of the model's stability using paid social media efforts and how strategists can use the model as a tool to better understand and allocate the media budget in a Business-to-Consumer environment.

Website sessions were obtained from the company's Google Analytics, as well as Shopify, the company's e-commerce platform, being gathered and reported on a daily basis. Facebook, Twitter and Instagram activity were collected and tabulated by Facebook Ad Manager. Data were collected on a consecutive, daily basis and resulted in 37 daily observations and spend totals. Four individual paid social media performance metrics across Instagram, Instagram Stories, Audience Network and Messenger were

used as predictor variables (see Table 1). One social media variable — impressions was used as the dependent variable in the regression equations. Impressions were used versus spend because the SMPM did not find any statistically significant relationships between the variables when ran with spend as the dependent variable.

Variables	Data description	Sources of data
Outcome		
Impressions	Spend impressions	Facebook
Predictor		
Paid social media		
Instagram Impressions	US$ spend	Facebook
Instagram Stories Impressions	US$ spend	Facebook
Audience Network Impressions	US$ spend	Facebook
Messenger Impressions	US$ spend	Facebook

Table 1: Summary of data sources (daily).

DATA ANALYSIS

The SMPM utilizes a time-series analysis approach to examine the relationship of organic and paid social media to the company's website sessions (Wilcox, Sussman, & Chung, 2018). In this campaign, the ultimate goal for the SMPM was to accurately

identify statistically significant predictors for website sessions and to determine the importance of the variables.

The predictor variables described earlier were used in a generalized least-squares regression equation that examined website sessions as the dependent variable. In determining which variables were significant predictors of the dependent variable series, a step-by-step regression analysis with reverse elimination of non-significant predictors was used. The least significant predictors were dropped for each model and additional regression analyses were carried out until a final model was obtained for each dependent variable with all significant variables ($p < 0.05$). Due to the problems that autocorrelation can present in time-series data analysis, a generalized least-square regression approach that uses autocorrelation estimates in the residuals of the model was used to estimate structural parameters. The SAS AUTOREG procedure was used, considering possible significant self-correlation at one-day lags (Wilcox, Sussman, & Chung, 2018).

PROCEDURE

The campaign was holiday themed with festive decorations and settings. An art director styled the photoshoot and selected which photos would be best for which ad channels. Copy was crafted for 6 different ads (see appendix). Some ads contained a discount code to encourage purchasing (Figure 3). Facebook was selected as the main social channel to create the ads on for ease and their access to Instagram, Messenger and the Audience Network (Figures 3-5). The Audience Network allows advertisers to extend

Facebook and Instagram campaigns across the Internet, onto thousands of high-quality websites and apps (*Marketing on Facebook*, 2019).

Facebook is the most popular social media channel today, with an average of 50 percent of people using Facebook daily (Cooper, 2018). Additionally, there are 1.47 billion daily active users on Facebook (*Marketing on Facebook*, 2019). The social media platform has become a playground for advertisers because not only is there a significant amount of people on the platform daily, 76 percent of U.S. consumers have purchased a product they've seen in a brand's social media post. The average user clicks on 10 Facebook ads every month, and for female-identified users that number increases to 12. Fifty-two percent of American consumers report that they have seen a product they are interested in on Facebook in the last three months. This number is even higher for 18 to 34 year-olds, with 78 percent saying they have seen interesting products. Furthermore, nearly 48 percent of American social media users say they purchased an item they initially saw on Facebook. The next most popular was Instagram with a mere 8.6 percent (Cooper, 2018).

Figure 3: HHA Instagram Story sponsored post

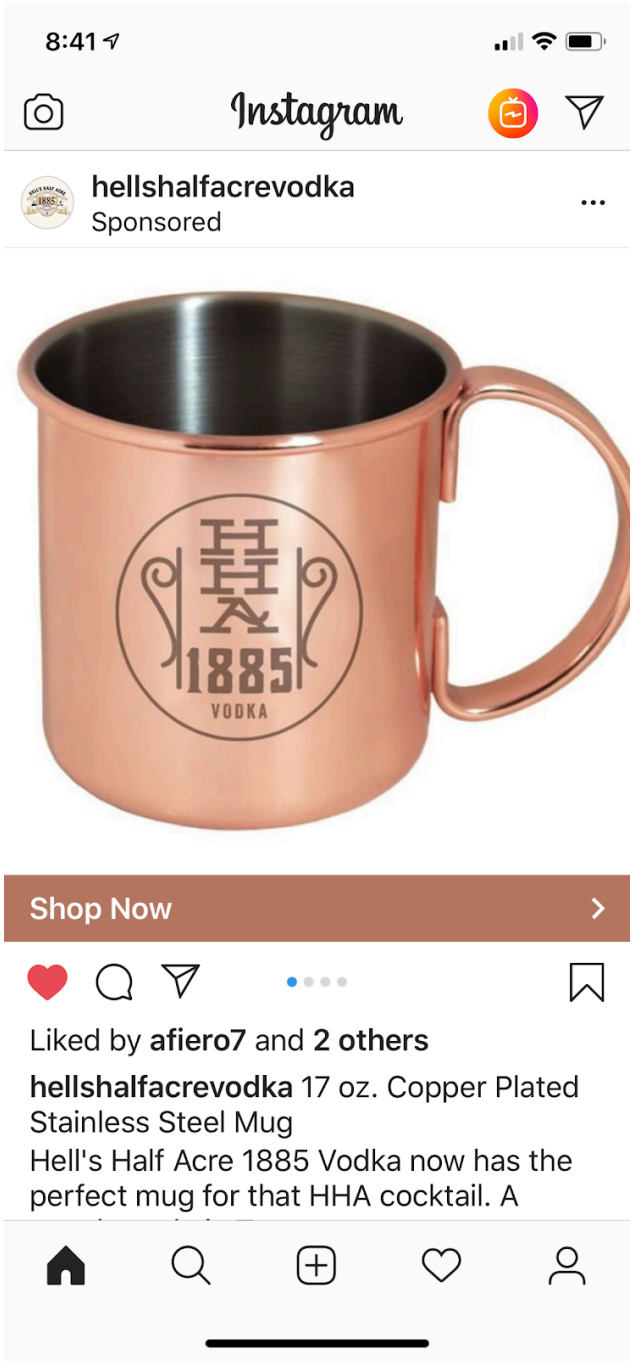

Figure 4: HHA Instagram feed sponsored post

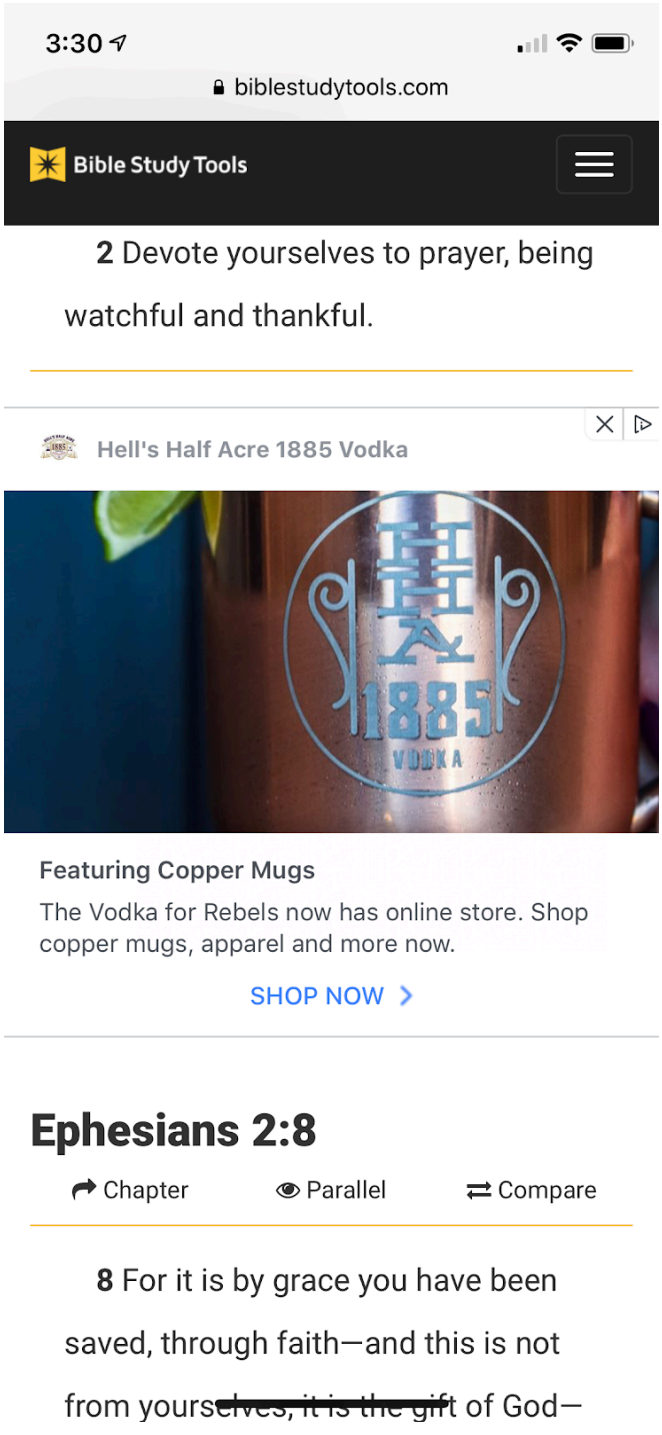

Figure 5: HHA audience network banner

The campaign was created using Facebook's ad manager platform with the KPI to increase website sessions to the Moscow Mules shopping link: https://hells-half-acre-1885-shop.myshopify.com/products/hells-half-acre-circle-logo-moscow-mule-mug-17-oz (Google link shortener was used). The webstore is hosted on an ecommerce platform called Shopify.

A Facebook pixel was set up so when someone visits the website and takes an action, e.g. buying something, the Facebook pixel is triggered and reports this action. This allows the advertiser to know immediately when a customer took an action after seeing the Facebook ad. Furthermore, the pixel tracks the customer and advertisers can reach the customer again by using a customer audience (*Marketing on Facebook*, 2019). As more conversion occur on the website, Facebook becomes better at delivering the campaign's ads to people who are more likely to take certain actions, i.e. conversion optimization. For this campaign, "website" was selected as the conversion event location and "view content" was the conversion event. "View content" is aforementioned website link. In addition to Facebook pixel, the Shopify website was linked to Google Analytics so metrics were provided on all three platforms.

The daily budget was $20.00 USD using a lowest cost bid strategy. However, this amount is just an average as ads may have more opportunities to get results so the spend could be up to $5.00 USD more or less to maintain that budget. Lowest cost bid strategy is when Facebook bids with the goal of getting you the "lowest possible cost per optimization event while also spending your entire budget by the end of the day or your

ad set's (or campaign's) schedule" (*Marketing on Facebook*, 2019). This bid strategy spends the campaign's budget as efficiently as possible. The campaign was charged for every impression.

Custom target audiences were created for the campaign. This audience was named "Website Visitors" and included major cities in Texas within a 25-mile radius of the city. The cities included: Austin, Dallas, Fort Worth, Houston and San Antonio. The demographics included all genders 21-65+ and Facebook was allowed to expand the target audience to achieve better results. Specifically, Facebook is allowed to adjust the interest-based targeting to reach more people who may bring more and/or cheaper results (*Marketing on Facebook*, 2019). The ads were placed on Facebook feeds, Instagram feed and stories, Audience Network (native and banner) and Messenger inbox.

The optimization goal selected was conversions. The ads were standard delivery, which allowed Facebook to pace the ads in order to deliver the ads in "a way that accounts for that variation so you can meet your cost goals even when market conditions change," (*Marketing on Facebook*, 2019). Two aspects of pacing work in tandem: budget pacing and bid pacing. For example, if an advertiser selected a lifetime budget and lowest cost bid strategy for an ad campaign that ran for a week, if it happens to run when opportunities are more expensive due to increased auction competition (the holidays), the entire budget could be spent in a few days on expensive results (*Marketing on Facebook*, 2019). However, Facebook is able to pace the spending therefore the budget is still available towards the end of the campaign run time.

As noted in the beginning, the purpose of this chapter was to use two research questions to evaluate the SMPM. The goal was for the SMPM to accurately identify statistically significant predictors for website sessions and to determine the significance of the variables. The ads for the campaign were created and set up via Facebook ads manager running continually from Black Friday to Christmas Day. The next chapter will discuss the results of the SMPM.

Chapter IV: Findings

In this chapter, the findings of the research questions are examined and answered. The p-values and B-values of the variables are analyzed and the most important variable is identified.

The full and final regression models with the statistically significant variables are presented in Table 2 (impressions).

Predictor	Full model			Final model		
	(R2 = 0.713, MAPE = 24.61, RMSE = 3.88638)			(R2 = 0.897, MAPE = 15.17, RMSE = 2.32762)		
	B-value	t-ratio	*p*-value	B-value	t-ratio	p-value
Intercept	-6.4717	-1.17	0.2732			
Facebook impressions	0.0243	4.52	0.0014	0.0255	8.04	<.0001
Instagram Impressions	0.008796	1.52	0.1632	0.0135	4.60	0.0013
Instagram Story Impressions	-0.0335	-1.14	0.2840			
Audience Network Impressions	-0.0516	-0.97	0.3551			
Messenger Impressions	2.2674	2.59	0.0293	1.1141	2.32	0.0458

Table 2: Full and final model — impressions

The results of the final regression models were for website sessions three social media spend variables — Messenger, Facebook and Instagram advertising spend — exhibited statistically significant relationships in the final model. The final model

explained nearly 90 per cent of the variance of the given predictor variables for website sessions. This answers RQ1, for this Business-to-Consumer market the model identified significant social media activities with a high degree of accuracy that can be seen by an examination of the R2, MAPE and root mean square error (RMSE) values that demonstrate the model's fit.

The B (beta) value is a measure to determine the strength the relationship between the predictor variable and dependent variable and is measured in units of standard deviation. The B value produced by the regression analysis provided insight by revealing the importance of each of the significant predictor variables on website sessions and was used to answer RQ2 — can the model provide insight into the importance of the variables? Yes, in this model it identified there were statistically significant relationships with three variables. The B value of Messenger impressions is 1.11 while Facebook and Instagram impressions were much lower at .02 and .01. Therefore, Messenger impressions was clearly the most important variable in website sessions.

Chapter V: Conclusion

Discussion

The findings in this study provide additional evidence of the ability of the SMPM to identify key predictor variables such as Facebook advertising spend and how they relate within an integrated media campaign. Facebook, Instagram and Messenger impressions were statistically significant with website sessions. The major finding from this study is that Messenger was much more important in the relationship to sessions than Facebook and Instagram. The B value of Messenger impressions is 1.11 while Facebook and Instagram impressions were much lower at .02 and .01. Messenger impressions and sessions are highly correlated. For this campaign, Messenger is a more effective promotional tool than the other two channels.

Implications

Understanding these relationships, advertising strategists can make real-time adjustments to take advantage of these metrics e.g. where to continue spending money, which channels ads should continue on and which should be stopped. With Messenger reportedly having 1.3 billion monthly active users in October 2018, there is opportunity to reach a wide audience on this channel (Constine, 2018). For future campaigns, further testing and reconsideration of a Messenger strategy for the brand should be considered either to minimize or maximize desired results as it was previously layered in the holiday campaign as a minor advertising and messaging strategy within Facebook and Instagram.

However, beyond Messenger, Facebook and Instagram, there are hundreds and thousands of options for advertising placements. As budgets for social media advertising increase, advertisers need to keep looking for relevant forms of integrated options.

In this ever-evolving digital landscape, advertisers and marketing managers are tasked with a job that requires constant testing. CMOs are trying to digest the influx of data. Strategists are being asked to prove the ROI on social media. The results from this study show that with the SMPM it is possible to utilize the enormous amounts of data and strategically plan future campaigns.

This thesis found that the major outcome is specific to channel consideration. Facebook and Instagram were assumed to be the most effective channels for this target audience; however, this study found that Messenger was exhibited a stronger relationship to sessions than either Facebook or Instagram. From this finding, the Hell's Half Acre social media team should more seriously consider Messenger for future campaigns to effectively drive traffic to the website. A data-driven insight would be to alter the spending to put more emphasis on Messenger than any other of the social platforms examined. As the company grows and new launches occur, the social media team will consider the insights gained from findings and the company can make effective marketing decisions that will enable long-term success.

LIMITATIONS

While the campaign met the company's business objectives of increased web traffic, there were no sales of the Moscow mule mugs attributed to social media. As previously mentioned, the SMPM is an applied analysis used to understand which digital marketing channels, e.g. paid social, attributed to conversions and therefore cannot account for offline marketing. There were three sales that occurred during campaign period; however, each was a result from word of mouth marketing over text message, resulting as a direct referral conversion. Measuring an offline conversation is near impossible so that information was not included in the data analysis. Furthermore, the duration of the campaign was very brief for a startup that did not have the benefit of brand recognition or an established brand reputation. Additionally, the overall budget of the campaign was small at only $20 a day. Also, the campaign was limited geographically as well, focusing on only major cities in Texas.

The SMPM succeeded in analyzing the company's data and provided fascinating insights; however, the model is up to the guidance and interpretation of the user. While the model can identify statistically significant predictors and their significance, it cannot answer the reason "why." Furthermore, it should be mentioned that relationships in this study are merely correlational and not causal. In conclusion, the SMPM provided insights into a specific KPI that the Hell's Half Acre team can apply towards the planning and execution of future campaigns. A brand strategist can take away from this thesis that a digital campaign is never absolute and can always be modified and updated to reflect the

insights found from the data; however, while models can relay what was statistically significant, it is ultimately the strategist's interpretation of these models that are most important to future efforts.

Appendix

Figure 6: Campaign photo in front of fireplace

Figure 7: Campaign photo of vodka bottle and mugs on stocking

Figure 8: Campaign photo of HHA mugs and vodka bottle in a gift box

Figure 9: Campaign photo of HHA mugs and vodka bottle on door step

Figure 10: Campaign photo of HHA mugs at dinner table

Figure 11: Campaign photo of HHA mug with lime

Figure 12: Campaign photo of Santa drinking from HHA mug

References

Bayus, B. (2013, January). Crowdsourcing New Product Ideas over Time: An Analysis of the Dell IdeaStorm Community. Retrieved 2019, from https://pdfs.semanticscholar.org/af69/a260bc41763796bc464d294ac56bcbe22c9a.pdf

Constine, J. (2018, July 25). 2.5 billion people use at least one of Facebook's apps. Retrieved April 21, 2019, from https://techcrunch.com/2018/07/25/facebook-2-5-billion-people/

Cook, R. (2011, August 9). The 'Magic' That Is Media-Mix Modeling. Retrieved April 22, 2019, from https://www.cmo.com/features/articles/2011/8/9/the-magic-that-is-media-mix-modeling.html#gs.5ba907

Cooper, P. (2018, June 06). Social Media Advertising Stats that Matter to Marketers in 2018. Retrieved from https://blog.hootsuite.com/social-media-advertising-stats/

Dodaro, M. (2019, April 10). The ROI of Social Media: Measuring What Matters. Retrieved April 21, 2019, from https://www.socialmediatoday.com/news/the-roi-of-social-media-measuring-what-matters/552390/

Fan, W., & Gordon, M. D. (2014, June). The Power of Social Media Analytics. *Communications of the ACM, 57*(6), 74-81.

Gullans, G. (2016) 'Five steps to measuring your social media ROI', available at: http://adage.com/ article/digitalnext/steps-measuring-social-media- roi/303730/ (accessed 11th April, 2019).

Hinson, B. (2016, March 26). Understanding the difference between Digital Attribution and Media Mix Modeling. Retrieved April 22, 2019, from https://medium.com/@BenHinson/understanding-the-difference-between-digital-attribution-and-media-mix-modeling-c4f7b7a53bbc

How Analytics Reinvented Advertising |. (2017, October 29). Retrieved April 22, 2019, from https://www.technative.io/how-big-data-reinvented-the-advertising-industry/

Kaushik, A. (2013, November 08). Multi-Channel Attribution Modeling: The Good, Bad and Ugly Models. Retrieved April 22, 2019, from https://www.kaushik.net/avinash/multi-channel-attribution-modeling-good-bad-ugly-models/

Marketing on Facebook. (2019). Retrieved April 22, 2019, from https://www.facebook.com/business

Moorman, C. (2016) 'CMO Survey Report: highlights and insights', available at: https://cmosurvey.org/wp-content/uploads/

O'Guinn, T. C., Allen, C. T., Scheinbaum, A. C., & Semenik, R. J. (2019). *Advertising and integrated brand promotion* (pp. 100-125). Boston, MA, USA: Cengage.

Samuel, K. (2017, September 08). Cost-Effective Versus Low-Value Ways To Advertise Through Social Media. Retrieved from https://www.forbes.com/sites/forbesagencycouncil/2017/05/22/cost-effective-versus-low-value-ways-to-advertise-through-social-media/#6dcea02f2368

Sciarrino, J., Friedman, J., Kirk, T., & Kitchings, K. S. (n.d.). *"100% Cotton: Quantifying the Importance, Contribution and Efficiency of Cotton Inc.'s Paid, Owned, and Earned Media through the Customer Journey Modeling"*[Scholarly project]. Retrieved April, 2019.

Stelzner, M. (2017) '2017 social media marketing industry report', available at: https://www. socialmediaexaminer.com/social-media-marketing- industry-report-2017/ (accessed 7th April, 2019).

Welch, C. (2018, October 17). Facebook may have knowingly inflated its video metrics for over a year. Retrieved from https://www.theverge.com/2018/10/17/17989712/facebook-inaccurate-video-metrics-inflation-lawsuit

Who Made America? (n.d.). Retrieved April 21, 2019, from https://www.pbs.org/wgbh/theymadeamerica/whomade/wanamaker_hi.html

Wilcox, G. B., Dr, Susan, K., & Chung, A. (2018). Social media's ROI in an integrated marketing campaign: Media mix modelling. *Journal of Digital & Social Media Marketing, 6*(2), 1-10, 1-10.

Zuckerberg, M. (2019, January 25). Opinion | The Facts About Facebook. Retrieved April 22, 2019, from https://www.wsj.com/articles/the-facts-about-facebook-11548374613

Vita

Hayley Faith Rodriguez was born in San Antonio, Texas and grew up in Fort Worth, Texas. After completing her work at Southwest Christian School, Fort Worth, Texas, in 2012, she entered the University of Texas in Austin, Texas. She received the degree of Bachelor of Science in Public Relations from the University of Texas in May 2016. After graduation, she worked in Austin, Texas and received her full-stack web development certification. In August 2017, she entered the Graduate School at the University of Texas at Austin.

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